

Zeitschrift: IABSE congress report = Rapport du congrès AIPC = IVBH
Kongressbericht

Band: 12 (1984)

Artikel: Annacis Island Bridge

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DOI: <https://doi.org/10.5169/seals-12240>

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Annacis Island Bridge

P.R. TAYLOR and **O.F. SIMONSEN**

CBA-Buckland and Taylor
Vancouver, BC, Canada

BRIDGE DESCRIPTION

Type of Bridge:	Modified Fan Cable Stayed Bridge.
Spans:	50m, 182.75m, 465m, 182.75m, 50m.
Tower Height:	154.3m above top of pilecap.
Midspan Shipping Clearance:	58.4m above High Water.
Traffic Capacity:	Initially 4 lanes of highway traffic.
Design Capacity:	6 lanes of highway traffic or 4 lanes plus 2 tracks for ALRT.

SUPERSTRUCTURE

The superstructure comprises a structural steel skeleton consisting of constant depth twin I beams and transverse floorbeams, which supports a composite precast concrete deck with a cast in place concrete overlay.

I beams:	2.1m deep by 18m long typically. Splices are bolted.
Floorbeams:	Tapered 1.6m to 1.8m deep by 27.2m long typical.
Floorbeam spacing:	4.5m typical.
Quantity of Structural Steel:	5,600 tonnes.
Grade of Structural Steel:	350 AT Category 2. 350MPa Yield Stress Atmospheric Corrosion Resistant Steel having a guaranteed Charpy Impact Strength of 27 Joules at -20°C.
Precast Deck Panels:	13.5m x 4.0m x 215mm typical - weight 35 tonnes approx.
Precast Concrete Strength:	55 MPa @ 56 days.
Overlay Concrete Strength:	55 MPa @ 56 days.

CABLES

Cables are Long Lay Galvanized Bridge Strand sheathed with black polyethylene. Every cable has a zinc filled cast steel socket at both ends. Cables terminate at tie beams in the towers where provision is made for jacking and adjustment.

Number of Cables:	192 main cables, 8 tie down cables.
Cable lengths:	49.5m to 237.5m.
Cable diameters:	80mm to 130mm.
Wire:	7mm diameter galvanized, U.T.S. 1520 MPa.
Cable Assembly Weights:	2 tonnes to 24 tonnes.
Total Cable Weight:	1505 tonnes (excluding sockets).
Total Socket Weight:	193 tonnes.

TOWERS AND BENTS (including Pilecaps)

The towers and bents are reinforced concrete structures with provision for ductile behaviour in earthquake.

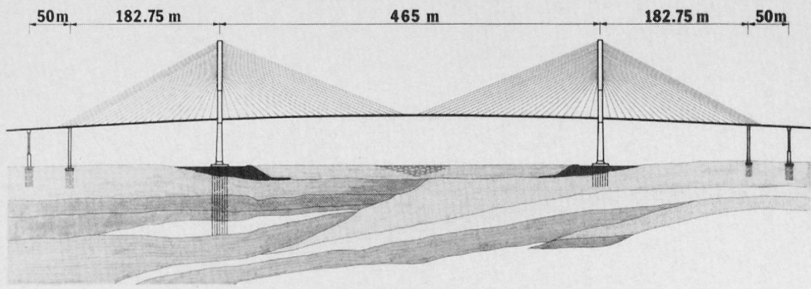
FOUNDATIONS

All of the foundations rest on steel piles. In addition, densification piles were used in the upper sands around piers N1, N2 and N3 to eliminate the possibility of liquefaction during earthquake.

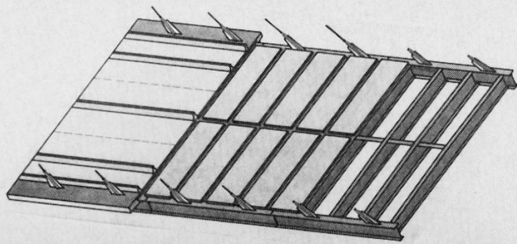
SHIP IMPACT

Piers S1 and N1 have protective surrounds, designed to withstand the impact of a 60,000 DWT vessel travelling at 12 knots.

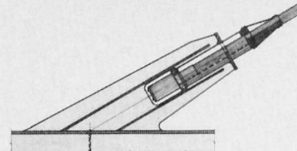
ANNACIS ISLAND BRIDGE



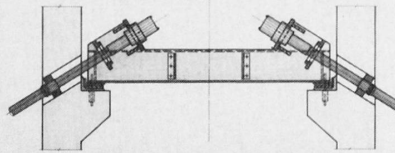
BRIDGE ELEVATION



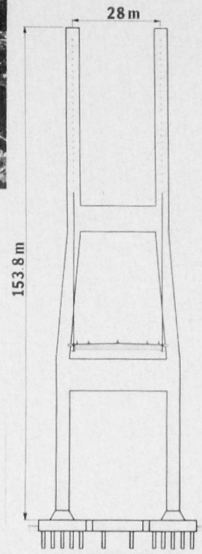
ISOMETRIC VIEW OF DECK



LOWER CABLE ANCHOR



UPPER CABLE ANCHOR



TOWER